ABSTRACT OF THE DISCLOSURE

A permanent-magnet rotating machine includes a rotor having a rotor core carrying on its curved outer surface multiple permanent magnets arranged in two rows along an axial direction in such a manner that the permanent magnets in one row are skewed from those in the other row in a circumferential direction by a row-to-row skew angle (electrical angle) θe, and a stator having a cylindrical stator core in which the rotor is disposed, the stator core being provided with stator coils for producing a rotating magnetic field for rotating the rotor. A lower limit of the row-to-row skew angle θe is set at a value larger than 30 degrees (electrical angle). A cogging torque ratio, or the ratio of a cogging torque occurring in the absence of skew to a cogging torque occurring when the permanent magnets are skewed, at a row-to-row skew angle of 30 degrees is calculated based on the relationship between the cogging torque ratio and the row-to-row skew angle θe and B-H curve properties of the stator core, and an upper limit of the row-to-row skew angle θe is set at a value not larger than its maximum value at which the cogging torque ratio does not exceed the calculated cogging torque ratio at 30 degrees.